Final Report
2000 Sediment Management Unit 56/57 Project
Lower Fox River, Green Bay, Wisconsin

Prepared for
United States Environmental Protection Agency
Wisconsin Department of Natural Resources

Prepared by
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1. Introduction

1.1 Purpose

In May of 2000, Fort James – now a part of Georgia-Pacific (referred to as Fort James throughout the rest of the document) – agreed to complete a dredging project initiated the previous year at the section of the Lower Fox River, near Green Bay, Wisconsin, known as Sediment Management Unit 56/57 (SMU 56/57). Figure 1 shows the location of SMU 56/57. An Administrative Order By Consent (Docket No. V-W-00-C-596) (AOC) was entered into by Fort James Corporation and Fort James Operating Company (together referred to as "Fort James"), United States Environmental Protection Agency (USEPA), and the State of Wisconsin. This report, submitted by Fort James, is the Final Report required by Section XI of the AOC and summarizes the actions conducted in 2000 at SMU 56/57 to comply with the AOC.

1.2 Background

The previous sediment dredging work conducted at SMU 56/57 in 1999 (1999 Demonstration Project) is documented in the *Draft Summary Report, Sediment Removal Demonstration Project, Sediment Management Unit 56/57, Fox River, Green Bay, Wisconsin* (Montgomery Watson, 2000), prepared for the Fox River Group of Companies (FRG) (a group of companies identified as potentially responsible parties by USEPA, Wisconsin Department of Natural Resources (WDNR) and other governmental agencies). In addition, 1999 Demonstration Project results are described in *A Mass-Balance Approach for Assessing PCB Movement During Remediation of a PCB-Contaminated Deposit on the Fox River, Wisconsin* prepared by the US Geological Survey (USGS Water Resources Investigations Report 00-4245, December 2000). The 1999 Demonstration Project was funded by the FRG.

At the conclusion of the 1999 Demonstration Project, certain areas of SMU 56/57 were not dredged to the project's specifications, which resulted in surficial sediment concentrations of polychlorinated biphenyls ("PCBs"), in certain portions of SMU 56/57, which USEPA and WDNR believed to be unacceptably high. A total of 31,346 cu yd of sediment was removed from the river in 1999, compared to the objective of 80,000 cu yd (Montgomery Watson, 2000). Although falling short of its removal objective, the 1999 Demonstration Project provided instructive experience concerning hydraulic dredging (i.e., dredging is difficult, costly, and can be unpredictable).

Fort James approached WDNR and USEPA in the spring of 2000 and offered unilaterally to return to SMU 56/57 and complete the project. Under the terms of the AOC, Fort James funded and managed the project in 2000 with oversight from both the USEPA and WDNR. This project will be referred to in this report as the "2000 SMU 56/57 Project".

1.3 Project Objectives

The objectives of the project, as provided in the Statement of Work (SOW), Attachment A to the AOC, are presented in the following italicized text. This text is taken directly from the SOW. Figures referred to in the following text are attached to the SOW, and are not provided in this final report.

A. Purpose

The purpose of this Statement of Work ("SOW") is to set forth the requirements for performance of a removal action involving dredging of contaminated sediment from a portion of the area known as Sediment Management Unit ("SMU") 56/57, located in the vicinity of the Fort James Corporation facility located on the west bank of the Lower Fox River, Wisconsin. The work is being conducted under Administrative Order by Consent No. V-W-00-C-596 ("AOC"), to which this SOW is attached.

B. Description of Removal Action

1. *Respondent will use hydraulic dredging to remove contaminated sediment from certain subunits of SMU 56/57, as numbered on Figure 1 attached to this SOW, in two phases. Phase I will remove sediment from all areas in subunits 12, 13, 14, 15, 16, 17, 23, 24, 25, 26, 27, 28 and portions of subunits 18, and 29. In order to obtain stable side slopes, sediments from portions of subunits 34, 35, 36, 37, 38, 39, and 40 ("Phase I Subunits") will be removed. If the project does not enter Phase II, then sediments from portions of 18 and 29 will be removed for side slope stabilization. The foregoing will be collectively referred to as "Phase I Subunits." The approximate horizontal extent of Phase I dredging is shown on Figure 1. The vertical extent of dredging will be determined by the Cleanup Objectives, as defined below, subject to the limitations contained in this Paragraph I.B.1. Phase II will remove sediment from the remaining portions of subunits 18, 36, 37, 38, and 39, and from all or part of subunits 19, 29, 30, 40, 41, 46, 47, 48, 49, 50, and 51 ("Phase II Subunits"). Respondent shall not be required to remove more than a total of 50,000 cubic yards ("CY") of in-place sediment from the Phase I and II Subunits, given the need to preserve stable side slopes, avoid leaving residual elevated PCB concentrations, and remain within the remaining capacity of the Fort James Green Bay Landfill Cell 12A ("Cell 12A") located at Respondent's Green Bay Landfill (WDNR Lic. #2332), which has been approved to receive dewatered sediments containing over 50 parts per million ("ppm") PCBs ("TSCA-level Sediments"). The Phase II Subunits will be dredged only to the extent that Respondent can meet the Cleanup Objectives, establish stable side slopes, and remain within the 50,000 CY volume limit. All dredged sediment will be dewatered and made suitable for placement in Cell 12A. Respondent will properly dispose of all TSCA-level Sediments in Cell 12A and the balance of the PCB-contaminated sediments, if any, as provided in Section II.E of this SOW.*

2. *Respondent will construct access roads, staging areas, work pads, and other infrastructure as necessary to accomplish the required sediment dredging, dewatering, stabilization, truck loading, truck washing, parking, and associated activities.*

3. *Respondent will provide or obtain the necessary utilities, site security, and support services to complete the project.*

4. *At the completion of the response activities, Respondent will restore the on-shore area used for the response action to a stable and secure status as determined by Respondent, the owner of the on-shore area.*

C. *Cleanup Objectives*

As part of the Removal Design, discussed in Section II.A.2 of this SOW, target dredging elevations will be established for the Phase I and Phase II Subunits based on the goal of attaining a residual surficial PCB concentration (defined for purposes of this SOW as the upper four inches of undisturbed sediment after dredging) of approximately 1 ppm, establishing stable side slopes at the conclusion of the dredging, and remaining within the 50,000 CY volume limitation, using existing data and estimated cross-sections of SMU 56/57. Dredging of each subunit will proceed until any of the following Cleanup Objectives is met:

- *Post-dredging sampling of the subunit pursuant to Section II.F of this SOW indicates that a surficial sediment concentration of 1 ppm PCBs or less has been attained; or*

- *Post-dredging sampling of the subunit pursuant to Section II.F of this SOW indicates that a surficial sediment concentration of 10 ppm PCBs or less has been attained and Respondent will place six inches of clean sand over the entire subunit; or*

- *Post-dredging sampling all subunits in each Phase pursuant to Section II.F of this SOW indicates that a surficial sediment concentration of 10 ppm PCBs or less has been attained in 90% of the subunits in that Phase, the surficial sediment concentration does not exceed 25 ppm in any subunit in that Phase, the average surficial sediment concentration of all subunits in that Phase is less than or equal to 10 ppm, and Respondent will place six inches of clean sand over all subunits that have not attained a surficial sediment concentration of 1 ppm PCBs or less.*

If the USEPA On-Scene Coordinator ("OSC") makes a determination, in consultation with the WDNR On-Scene Representative ("OSR"), that achieving a surficial sediment concentration of 10 ppm PCBs or less in a given subunit is impracticable or undesirable (e.g., due to the need to maintain appropriate side slopes), the Cleanup Objectives will be deemed to have been met in that subunit, as long as Respondent will place six inches of clean sand over the entire subunit. The foregoing Cleanup Objectives do not apply to the side slopes of the subunits at the perimeter of the dredged area, which shall be designed to minimize sloughing or slumping in the dredged area. All dredged side slopes will be covered with six inches of clean sand.

Reference to Phase I and Phase II in this Final Report are to the phases described in the above text taken from the SOW.

Though not formerly stated in the AOC and the SOW, the completion of the project in calendar year 2000 was a Fort James process design objective. The dewatered sediment was to be disposed of in the Fort James Green Bay West Landfill Cell 12A (Cell 12A), which had been approved to receive dewatered sediments containing over 50 parts per million PCBs and other project-related wastes.

The extent of the 2000 dredging project was determined by the clean-up objectives described in the SOW (as provided above). In addition, the work was to initiate in the Phase I areas, those being the areas disturbed by the 1999 Demonstration Project. The work would then proceed into the Phase II areas, those being the undisturbed areas. A total of approximately 50,000 *in-situ* cubic yards of sediment were to be removed from Phases I and II during the 2000 SMU 56/57

Project (Figure 2). All water discharged to the Fox River during the operation and demobilization was to be treated to meet certain water quality discharge targets.

2. State and Federal Agreements

In May of 2000 Fort James, WDNR, and USEPA entered into the AOC in order to complete the dredging component of the 1999 Demonstration Project. The complete text of the AOC, including the SOW and its attachments, can be viewed at offices of the USEPA Region 5, and at offices of the WDNR. They are also currently available on the Internet at www.dnr.state.wi.us/org/water/wm/lowerfox/ or www.epa.gov/region5/foxriver/.

3. Investigation and Pre-Removal Activities

3.1 2000 Engineering Team Selection

Whereas, Fort James maintained the overall project management responsibility and supplied a project team, two engineering firms were retained to assist Fort James' Corporate Engineering with the 2000 SMU 56/57 Project. The two firms retained were Foth & Van Dyke, Green Bay, Wisconsin, and Hart Crowser, Lake Forest, Illinois.

Specific tasks were assigned to each firm. Hart Crowser's primary responsibilities consisted of assisting with agency negotiations, developing the Work Plan/Design Memorandum, Sampling and Analysis Plan (SAP), and the Quality Assurance Project Plan (QAPP), and to serve as QA Manager for the project.

Foth & Van Dyke's primary responsibilities included developing the bid document specifications, reviewing contractor bids, coordinating and performing bathymetric surveys, construction observation, in-river sediment sampling, river turbidity monitoring, bathymetric sonar survey QA/QC, analytical data collection and reporting, community relations support, regulatory agency communications, and project management assistance.

Along with Fort James, both engineering firms were integral members of the project team, assisting with the overall project from planning through implementation and preparation of this Final Report.

3.2 1999 Project Closeout Work

The dredging portion of the 1999 Demonstration Project began on August 30, 1999 and, except with respect to the demobilization activities described below, ended due to cold weather on December 15, 1999. In preparation for the 2000 SMU 56/57 Project, equipment and materials left on site from the 1999 Demonstration Project were decontaminated and demobilized by Four Seasons Environmental, with oversight by Montgomery Watson and Fort James. The last portions of demobilization began on June 12, 2000 and were completed on July 21, 2000.

3.3 River Sediment Characterization - 2000

To further understand the characteristics of the sediments that would be dredged during the 2000 SMU 56/57 Project, Fort James retained STS Consultants, Green Bay, Wisconsin to collect sediment core samples from six locations at SMU 56/57 (STS, 2000). The objective of the work was to provide additional geotechnical data to support the dredging design plan.

Prospective dredge contractors were also invited to collect sediment samples during the STS sampling investigation work. STS provided a sample barge and the support equipment for collecting the core samples.

The prospective contractors participated in analyzing sediment samples and completing treatability studies prior to bidding the project.

3.4 Site Improvements

The 27.3-acre parcel located at 1505 State Street, known as the Former Shell Oil Company Terminal (Former Shell Terminal) and owned by Fort James (Figure 1), was used for the on-shore work for the 2000 SMU 56/57 Project.

In preparation for the land-based portion of the dredging operation, utilities and an asphalt work pad were constructed at the on-shore site during June and July 2000. The existing electrical utilities on site were upgraded to meet the anticipated requirements for the 2000 SMU 56/57 Project. A larger transformer and distribution system was installed as part of this utility upgrade.

A new 100,000 square foot asphalt work pad was constructed on site to contain the land based dewatering and water treatment operations. The containment pad was sloped to direct all project contact water to three water collection basins. Water collected in the basins during project operation was pumped to the slurry tanks for inclusion into the sediment dewatering process. Additional lighting was added around the work pad to accommodate a 24-hour workday.

Phone lines were installed at the site to support the project's communication system. Process water was obtained from a local fire hydrant through an approved meter and backflow preventer system.

4. Procurement Arrangements

4.1 Contractor Qualifications and Bidding Process

Fort James utilized a pre-qualification process designed to identify contractors that would be invited to submit proposals for the work associated with the 2000 SMU 56/57 Project. Following a review of qualifications, Fort James narrowed the list of potential contractors to Koester Companies, Superior Special Services and Sevenson Environmental Services. Fort James also made visits to these contractors to initially evaluate each contractor on the basis of their safety record, equipment capability, previous work history and supervisory skills.

Prior to issuing a Request for Proposal (RFP) each of the above mentioned contractors was invited to take sediment samples within the proposed dredging limits at SMU 56/57 as described in Section 3.3. This sediment sampling opportunity was provided so that each contractor could characterize the river sediments, as each contractor saw fit, and then submit responsive proposals. On June 8, 2000 the RFPs were sent to the three contractors, and on June 19, 2000 Fort James received proposals from each contractor.

4.2 Bid Review and Contractor Selection

Full-day bid review meetings were held at Fort James with each contractor. During the bid review each contractor was evaluated based on their safety record, technical approach, equipment capacity, project supervision, senior management dedication to the project, ability to meet the schedule requirements, past hydraulic dredging experience, and cost.

Sevenson Environmental Services was selected for the 2000 SMU 56/57 Project.

4.3 Subcontractors

Sevenson Environmental Services contracted with several subcontractors, including VOS Electric and Spirit Construction for mobilization services, McKeefry & Sons for hauling and placing dewatered sediment in Cell 12A, and Buffalo Divers for marine construction, including, but not limited to, installing silt curtains, debris removal, and placing clean sand over the dredged area.

5. Project Mobilization, Design, and Operation

5.1 Project Mobilization

Work at SMU 56/57 during the 2000 dredging season was designed and managed around strict adherence to the project schedule, which included a 60-day dredging period. During all phases of the project, e.g., engineering, design, construction, and operation, a core team of individuals representing the owner, dredge contractor, consulting engineers, and the regulatory agencies, were available 24 hours a day to respond to project needs. This method of communication and strict adherence to the schedule was focused on throughout the entire project.

5.1.1 General Site/Personnel Preparation

Additional site preparation work continued upon award of the construction contract to Sevenson Environmental Services.

A sediment loading facility was installed at the site. This facility included a truck loading area, a scale for weighing trucks containing dewatered sediment, a truck washing and decontamination area, and a manifesting trailer. Wash water from the truck washing activity was collected and treated through the dewatering and water treatment process.

Several construction trailers were set up on site to accommodate the 24-hour a day construction, operation and oversight work. Two on-site laboratories were set up to complete portions of the required sampling and monitoring during the project. Foth & Van Dyke's on-site laboratory was used to measure select parameters, process samples, and prepare samples for shipment to off-site analytical laboratories. Sevenson Environmental Services' laboratory was used for internal operational sampling and analysis.

A forty-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) standard training course was required for all Fort James employees, their contractors, and subcontractors working on the job site.

Department of Transportation Hazardous Material Transportation Training was provided through Lakeshore Technical College, Cleveland, WI. All Fort James employees, their contractors, and subcontractors involved with the sediment transportation work element of the 2000 SMU 56/57 Project were required to participate in this course.

5.1.2 Turbidity Containment

A new perimeter silt curtain was deployed around SMU 56/57 prior to the 2000 dredging activity. The silt curtain was installed around the entire dredge area and anchored through a series of sheet piles, screw anchors, and chains. The silt curtain was inspected and maintained as necessary throughout the dredging project. Inside of the perimeter silt curtain, three additional temporary silt curtains were installed sequentially as dredging progressed from north to south. The individual temporary silt curtains were used to divide up the dredge area into four work sections, as shown in Figure 3. The sections were referred to as Section 1, Section 2, Section 3 and Section 4. The temporary silt curtains provided additional protection for completed work areas, and provided a clear visual delineation of work in progress.

5.2 River Debris Removal

The project plan included debris removal from SMU 56/57 prior to dredging using two general methods. Divers located and marked large debris, whereby an extended arm backhoe mounted on a barge was used to remove the debris. In addition, the backhoe was used independently to locate and remove debris at the site. The debris encountered in SMU 56/57 ranged from logs to concrete weights. The debris was removed from the site and disposed of with the dewatered sediment in Cell 12A.

5.3 Dredging

Three hydraulic dredges were available on-site to remove sediment from SMU 56/57 in 2000. All dredges were the horizontal auger style, equipped with submersible pumps. The dredge pumps transported the augured sediment (dredge slurry) through a pipe system to a booster pumping station which, in turn, pumped the slurry to the land-based dewatering facility. Multiple dredges helped to ensure continuous dredging of sediments from SMU 56/57 throughout the construction time period, although only one dredge was used at any given time.

The depth of sediment to remove was established based on the available sediment data from the 1999 Demonstration Project and from the supplemental geotechnical boring report (STS, 2000). Target dredge elevations were developed for the sediment bed to correspond to post-dredging PCB concentrations in the surface sediments less than 1 ppm. Figures 2 and 3 show the target dredge elevations. To maintain stable side slopes throughout the dredge site, all side slopes were designed at 5H:1V slopes.

The original dredge plan consisted of a two-phased approach as shown in Figure 2. Phase I was designed to redredge the area that was dredged during the 1999 Demonstration Project. Phase I included sediments from subunits 12, 13, 14, 15, 16, 17, 23, 24, 25, 26, 27, 28, and portions of subunits 18 and 29. In order to obtain stable sideslopes, sediment from portions of subunits 34, 35, 36, 37, 38, 39 and 40 were also in the Phase I dredge plan.

Phase II was designed to remove sediment from remaining portions of 18, 36, 37, 38 and 39 and from all or part of subunits 19, 29, 30, 40, 41, 46, 47, 48, 49, 50, and 51. All side slopes in the Phase II dredge prism were designed at 5H: 1V slopes.

Based on the success of dredging in Phase I, consistent with the AOC, and with review and concurrence from USEPA and WDNR, the dredging operation moved into Phase II, Sections 2, 3, and 4.

5.4 Sediment Dewatering

The dredge and booster pumps transported the slurry from the river to the on-shore site where the slurry entered a vibrating shaker screen on a v-bottom tank. The shaker screen was used to remove debris, stones and vegetation from the dredge slurry. The dredge slurry was further circulated in the v-bottom tank and pumped to hydrocyclones that removed a portion of the sand contained in the dredge slurry. The dredge slurry then flowed into a 20,000-gallon agitated pump tank. A transfer pump moved the slurry to agitated mix tanks that fed the mechanical presses. Polymer was added to the dredge slurry prior to the mechanical presses.

Plate and frame mechanical presses processed the sediment to meet the specifications of ×50% solids with a compressive strength of 0.4 tons per square foot. After the appropriate cycle time was reached for the dewatered sediment to meet specifications, the dried sediment was discharged to a conveyor system (press drop), which transported the dewatered sediment to the work area storage pad. Cycle times of the plate and frame presses and polymer addition rates were adjusted as dredge slurry conditions changed. Figures 4 and 5 illustrate the overall process schematic and dewatering operation layout, respectively.

5.5 Water Treatment System

The water treatment system was designed and installed to adequately treat the required volumes of water generated during the dredging, sediment dewatering and decontamination operations. The water treatment system also treated all precipitation that came into contact with the asphalt work pad. Analytical testing was conducted routinely on the treated water to demonstrate that the treatment system was properly treating the water.

The water treatment system consisted of an untreated water surge tank, cloth bag filters, sand filters, carbon absorption system, and a final set of cloth bag filters. The treated water was then sampled per the *QAPP/SAP* procedures. Flow was measured through a magnetic flow meter, and the water was discharged to the Fox River.

5.6 Sediment Hauling and Disposal

The dewatered sediment from the mechanical presses was stored on the contained asphalt work area pad, in approximate 1,000 cu yd piles, until solids and free liquids testing was completed. Dewatered sediment was loaded from the pressing operation into 17 cu yd quad axle dump trucks. The trucks were loaded with a backhoe equipped with a 1-7/8 cu yd bucket. The trucks were loaded and weighed on the site scale, and then decontaminated on the contained asphalt work area pad, properly placarded, and manifested. All trucks used in hauling dewatered sediment and debris were equipped with primary locking latches and secondary mechanical turnbuckle latches. The trucks were also equipped with tarps, which completely covered the entire top of the truck such that no sediment was exposed while transporting the material to the landfill.

Dewatered sediment was transported approximately 6 miles to Cell 12A. Trucks traveled on a pre-approved truck route and dewatered sediment was transported, as required, 6-7 days per week during daylight hours only. All of the dewatered sediment and debris was placed into Cell 12A. The sediment was graded at the landfill with low ground pressure bulldozers. After final grading was complete, a 6 inch temporary cover was installed over the landfill cell. The final cover will be installed on the cell during the summer of 2001.

5.7 Sand Placement

In accordance with the AOC, Fort James was required to place clean sand over post-dredge subunits with residual PCB concentrations greater than 1 ppm. The clean sand was to be placed in a manner to result in a stable minimum thickness of 6 inches over the entire bottom and side slopes of each completed subunit.

To delineate the area dredged during 2000, Fort James also elected to place a minimum of 6 inches of sand over the entire 2000 SMU 56/57 Project dredge area, including those areas with residual PCB surface concentrations $\leq$1 ppm.

6. Operational Monitoring

Operational monitoring was performed according to approved plans to document that work was performed pursuant to the project's bid document, to determine whether cleanup objectives were met as set forth in the SOW, and to monitor the effectiveness of the work as described in the AOC and SOW. The guidelines used during monitoring were the approved *QAPP/SAP* (Hart Crowser, 2000a) and the *Addendum to the QAPP/SAP* (Hart Crowser, 2000b).

6.1 River Turbidity and Velocity Monitoring

River turbidity monitoring was performed during dredging operations to assess whether dredging activities caused significant solids resuspension and transport outside of the project's perimeter silt curtain. Turbidity was measured in nephelometric turbidity units (NTUs), using both portable and stationary turbidity meters.

During dredging, river turbidity monitoring was conducted in the river at three locations by the on-site representative of Fort James. The three locations included M1, the Fort James water intake (upstream); M2, 10 ft downstream (north); and M3, 50 ft downstream (north) of the perimeter silt curtain, as shown on Figure 6. The upstream location (M1) was measured with a stationary meter (YSI, Model 6820), while the downstream locations (M2 and M3) were measured using a portable turbidity meter (YSI, Model 6820) from a 16-ft long aluminum, flat bottom boat. During seiche periods, the upstream location was used as the downstream monitoring point. River turbidity was measured per the *QAPP/SAP*. In addition, throughout the project, USEPA representatives took a considerable number of turbidity readings at various river locations.

River velocity was also measured when the downstream turbidity measurements were taken. The velocity was measured using a Marsh-McBirney, Inc. Model 2000 portable meter in accordance with the *QAPP/SAP*.

A variation from the *QAPP/SAP* turbidity and velocity monitoring guidelines was a reduction in the frequency of monitoring, beginning on October 13, 2000, from twice daily to twice a day, every other day. This change, made with USEPA approval, occurred because the USEPA was performing turbidity monitoring on a daily basis and had not reported elevated turbidity readings due to dredging. A GPS unit was not used to monitor the location of the downstream monitoring points; rather, the monitoring locations were marked with buoys.

6.2 Water Column Monitoring for PCBs

In accordance with the approved monitoring plan, river water quality testing for PCBs was not performed by Fort James since there were no exceedances of turbidity as a result of dredging.

6.3 Bathymetric Surveys

Bathymetric surveys were used to monitor the progress of dredging and to determine the total volume of sediment removed from SMU 56/57 in 2000.

The initial survey used to define the pre-dredge river bottom elevations was conducted by Baird (Madison, Wisconsin) on August 14, 2000 (Figure 7). Baird used sonar equipment consisting of a Trimble 4400 RTK DGPS survey system, electronic echosounder, single beam 50 – 200 kHz transducer, and portable laptop computer. River water levels during the Baird surveys were continuously monitored with a Coastal Leasing "Micro Tide" pressure transducer.

Based on the August 14, 2000 pre-dredge survey and the target dredge elevations, the approximate thickness and volume of sediment to be removed to obtain cleanup objectives was determined (Figure 6). Approximately 49,600 cu yd of sediment were estimated for removal to reach target elevations and obtain the PCB cleanup objectives.

Post-dredge top of sediment surveys were performed using sonar surveys for each of the four completed sections. All sonar surveys were supplemented with Foth & Van Dyke poling surveys in the non-sideslopes of each section.

Poling was routinely performed by Foth & Van Dyke as part of the post-dredge sample collection process, as discussed in detail in Section 6.8. The pole used for the sediment survey was fitted with a 1 ft by 1 ft rigid Plexiglas plate to allow the pole to rest on top of the sediment surface without sinking. The location of each poling elevation was determined using a geodimeter that would track a prism located on the sampling boat. Depth to top of sediment was read directly from the graduated pole and recorded to the nearest 0.1 ft. An on-shore surveyor read water elevations from a staff gauge each time a poling depth was recorded. The top of sediment elevation was then calculated by subtracting the poled depth from the water elevation.

Since the post-dredge PCB sediment sampling locations within a subunit were randomly selected, additional poling locations were added to verify top of sediment elevation to develop a spatial distribution of poling locations across the entire base of the dredged area.

6.4 Press Drop Monitoring

The number of press drops performed each production day (7:00 p.m. to 7:00 p.m.) were logged and plotted graphically and compared to a daily target of 108 drops.

6.5 Dredge Slurry Monitoring

Dredge slurry was monitored by the contractor on a daily basis for volume and percent solids. Percent solids were determined in the contractor's mobile laboratory.

6.6 Dewatered Sediment (Filter Cake) Monitoring

The dewatered sediment (filter cake) was tested on a daily basis for free liquids, percent solids, and PCB content. The tests were performed on composite samples which covered one 24-hour period of dewatering (7:00 p.m. to the following 7:00 p.m). A composite sample consisted of up to ten subsamples.

To check *in-situ* strength of the dewatered sediment at the landfill, Foth & Van Dyke performed a visit to Cell 12A on September 6, 2000. Unconfined compression tests were performed using a pocket penetrometer on dewatered sediment placed in the landfill. Tests were performed on freshly placed, several hour old, and several day old compacted sediments. All landfill areas tested were found to be above the target strength specification of 0.4 tsf.

6.7 Water Treatment Monitoring

Effluent water quality monitoring was routinely performed to confirm the quality of effluent discharged to the Fox River. Carbon adsorption technology was used in the treatment process to reduce the concentration of organic contaminants in the effluent. Table 1 lists those parameters that were monitored during the project.

In addition to the above routine monitoring, grab effluent samples were analyzed with a hand-held turbidity meter (YSI Model 6820) on an hourly basis for the first 24 hours of dredging. Following the first 24 hours this frequency was changed to one grab sample tested every four hours; thereafter, until October 10, 2000, when turbidity monitoring was replaced with visual observations of the effluent tank. This change was made with USEPA and WDNR approval.

Routine effluent monitoring samples were collected with an ISCO sampler (6700 FR, refrigerated sampler) which was connected to the effluent discharge pipe. A sampling port was located in the effluent line near the ISCO sampler to allow grab samples to be taken.

Effluent turbidity and flow were measured in the field, as were the first 24-hour measurements of effluent pH. Thereafter, pH was measured by laboratory testing. In the field, turbidity and pH were measured with a hand-held YSI 6820 unit. Flow was measured with a magnetic flow meter and totalizer that displayed flow rates in gallons per minute (gpm) and total flow in gallons (g).

Laboratory testing was performed by EnChem (Madison, Wisconsin), except for low-level mercury, which was performed by the Wisconsin State Laboratory of Hygiene (Madison, Wisconsin). All laboratory samples were accompanied by a chain-of-custody form.

On October 13, 2000, with USEPA and WDNR approval, the frequency of testing effluent for PCBs and mercury was changed from twice weekly to once a week. This change was based on the data which showed that the previous six weeks of monitoring resulted in no detects of these parameters in the effluent.

6.8 Sediment Sampling

Confirmation sampling of river bottom sediment was performed after dredging had been completed to target elevation to determine if cleanup objectives had been achieved. Five separate sampling events comprised the sediment confirmation work. Prior to sediment sampling, bathymetric surveys were conducted to document that target elevations had been achieved. At some locations dense native river bottom (clay) was encountered at elevations above the target elevations. In those instances, dredging was terminated since project data had shown the native clay was not contaminated with PCBs.

USEPA representatives were present to observe the sampling activities during each of the sediment sampling events.

6.8.1 Random Sample Location Determination

Post-dredge sediment sampling locations were developed by further dividing each subunit into 20 ft by 20 ft grids. Since the subunits were 100 ft by 100 ft, this resulted in 25 grid cells per each subunit. One primary and four secondary grid cells were chosen in each subunit to be the primary and secondary sample locations, using a random number generator. Figure 8 depicts the location of all post-dredge primary and secondary sediment sampling locations.

For use in the field, the sample locations were graphically displayed on a site map that included sample coordinates. Sample locations were only identified for the subunit for which dredging had just been completed. The sample locations were not identified to the sampling team until the day sampling was to occur. Sample locations were never made available to the contractor prior to post-dredge sampling.

6.8.2 Sample Location in the Field

A 16-ft long aluminum, flat-bottomed boat was used to sample the river bottom sediment. The sampling boat was maneuvered to each sample location and anchors were placed to stabilize the boat. The boat was then maneuvered precisely into place using a geodimeter with 360-degree prism by adjusting the anchor lines. Sampling locations were recorded to the nearest 0.1ft.

6.8.3 Sample Collection

After the boat was secured at each sampling location, the depth of water was measured and recorded using a graduated rod with a 1 ft by 1 ft rigid Plexiglas plate on the bottom end. The sediment core sampling device (sampler) consisted of a Wildco™ stainless steel hand corer with 2-in diameter CAB core tubes. Sampling procedures were as specified in the *QAPP/SAP*.

6.8.4 Sample Processing

The sediment cores were received and processed in the on-site Foth & Van Dyke lab. A Dremmel™ saw was used to vertically cut open the CAB liners to expose the sediment. A description of the sediment was recorded on a core sample log sheet. The sample was then segmented into discrete units consisting of the top 4 inches of sediment and 6 inch segments thereafter. Each segment was homogenized using a stainless steel spoon in a disposable aluminum pan. The samples were then placed into coolers and prepared for shipment to the laboratory (EnChem, Madison, WI) following proper chain-of-custody procedures.

6.9 Sand Placement and Thickness Verification

The placement of sand over dredged areas at SMU 56/57 was performed pursuant to the AOC. Fort James elected to cover all areas dredged with a minimum of 6 inches of sand, even though the AOC stated that sand was not required to be placed where the PCB sediment concentration after dredging was equal to or less than 1 ppm. Sand placement was conducted following the receipt of PCB sediment data from the laboratory. The placement of sand began on September 23, 2000 in Phase I, Section 1, and was completed in Phase II, Section 4 on November 8, 2000. The sand was placed by Buffalo Divers of Buffalo, New York, a subcontractor to Sevenson Environmental Services.

Sand placement in the river was accomplished using a clam bucket located on a barge. The sand was deployed in a radial pattern around each barge set-up location. The clam bucket was opened at the water surface. Divers were employed to provide guidance on sand placement extent and thickness.

The sand thickness verification method involved measuring and recording the depth of water above the sand with a graduated rod with a 1 ft by 1 ft rigid Plexiglas square on the tip. The sampler with the 2-in CAB liner was lowered so the tip of the sampler was on top of the sand. The sampler was then manually pushed until refusal into the sand and/or underlying material. This allowed a plug to form beneath the sand so recovery could occur. The sample was then recovered and the sand thickness was visible through the CAB liner. A sand thickness measurement was then made.

A minimum of four sand thickness measurements were made in each 100 ft by 100 ft subunit that were required by the AOC to have sand placed in them. Buoys were placed at the corners of each subunit, using a geodimeter. The designated locations were then occupied by the sampling crew, using the buoys for visual reference.

Additionally, the USEPA performed Ponar sampling of the sand cover. The Ponar was effective in determining the presence of sand over the 2000 SMU 56/57 Project area.

6.10 Data Validation Procedures

The independent data validator, M.A. Kuehl Company, performed the data validation procedures for the 2000 SMU 56/57 Project. Procedures to validate data are from *National Functional Guidelines for Organic Data Review* (October, 1999, EPA-540/R-99/008) and *National Functional Guidelines for Inorganic Data Review* (February, 1994, EPA-540/R-94-013). Data from field samples and QC samples were assessed relative to the relevant data quality objectives (DQOs) developed in Section 3 of the *QAPP/SAP* (Hart Crowser 2000a). The data quality objectives addressed in the project are: precision, accuracy, representativeness, comparability, and completeness.

6.11 Daily Construction Observation

Fort James' on-site representatives monitored the project activities 24-hours per day, 7 days a week, and prepared daily construction observation reports.

6.12 Manifesting

Dewatered sediment (filter cake), sand and gravel were transported in covered trucks to Cell 12A. The trucked material was weighed during truck loading using the on-site scale. A manifesting form was filled out for each truckload of material shipped. The manifesting form was filled out by the scale operator (manifester). Each scale operator had received manifesting training per DOT HAZ MAT TRANS, 529-455-02. The manifesting forms used were the State of Wisconsin Form 4400-66P (Chapter 291, Wis Stats).

6.13 Regulatory Oversight

The WDNR and USEPA provided regulatory oversight for the project. The USEPA also contracted with Ecology and Environmental, Inc. (E&E) to assist in project oversight. The USEPA had a constant presence, 24-hours a day during the project. USEPA's On- Scene Coordinator (OSC) was Mr. Samuel Borries. WDNR's On- Scene Representative (OSR) was Mr. Gary Kincaid. Oversight activities included daily participation at the morning project meetings, which were also attended by Sevenson Environmental Services, Fort James, and Foth & Van Dyke.

7. Project Management

In compliance with the AOC, Fort James designated an employee from Fort James Corporate Engineering Department, as the respondent's Project Coordinator. The Fort James Project Coordinator, the EPA's OSC, and the WDNR's OSR, worked out of the same field office trailer, and openly shared information on the project as it became available.

Sevenson Environmental Services was contracted to work seven days a week, 24 hours per day, during the 60 day dredging project. Fort James and the USEPA had dedicated staff on site 24 hours per day, seven days a week, during the project. Foth &Van Dyke had engineering and laboratory staff, along with laboratory facilities, on site 12 hours a day, seven days a week.

Daily morning progress meetings were held in the Fort James construction office trailer. These meetings were attended by Fort James, USEPA, WDNR, Foth & Van Dyke, and Sevenson Environmental Services. The agenda and format followed for these meetings allowed for the rapid identification of problems and accompanying solutions, and for project information to be exchanged freely. These meetings also allowed for a timely and accurate exchange of information from everyone involved in the project.

8. Project Performance

The monitoring that took place during the 2000 SMU 56/57 Project allowed Fort James, Sevenson Environmental Services, Foth & Van Dyke and the regulators to aggressively manage the project schedule and to monitor the environmental performance of the project relative to the AOC and SOW. Key project performance measures are described in this section.

8.1 Dredging

8.1.1 River Water Turbidity and Velocity

Turbidity, both upstream and downstream of dredging operations, was monitored throughout the course of the project. The upstream location was a fixed station at the Fort James water intake (M1), and the downstream monitoring locations were variable depending on the location of dredging operations, but typically were conducted at 10 ft and 50 ft north of the perimeter silt curtain (M2 and M3, respectively) (Figure 6).

The "trigger level" for turbidity for the project, as stated in the *QAPP/SAP*, occurred if the downstream turbidity reading was two or more times higher than the upstream reading, and the cause of the increase was determined to be dredging. If the trigger level was exceeded, the dredge contractor was to be notified and dredging operations modified to minimize resuspension of sediment.

River turbidity monitoring data are presented on Figure 9. The upstream/downstream turbidity values never varied by a factor of two or more. Therefore, the turbidity monitoring data show that dredging activities did not cause significant sediment resuspension.

8.1.2 **Dredge Production Rates**

Given a 60-day dredging schedule, and a 50,000 cubic yard target dredge volume, it was necessary for the contractor to remove, on average, 833 cu yd of sediment per day. Sediment removal volumes were calculated daily by Sevenson Environmental Services and provided to Fort James. Figure 10 illustrates the removal progress compared to the 833 cu yd per day target.

Early in the project, the required dredging production rate was not being met. The two major components affecting production were determined to be dredge downtime and pressing capacity. The resulting decision was for Sevenson Environmental Services to bring one additional dredge to the site and to replace the smallest press (94 cu ft) with two larger presses (220 cu ft each). On September 23, 2000 an additional dredge arrived, and on September 27, 2000 the two larger presses arrived. As seen on Figure 10, an increase in production starting about October 2, 2000 is apparent. The highest production day reported by Sevenson Environmental Services was 1,599 cu yd on October 20, 2000. This increased production was a direct result of the additional equipment brought to the site.

8.1.3 Dredge Slurry

On a daily basis, the dredge slurry percent solids arriving at the dewatering plant were monitored by Sevenson Environmental Services. The percent solids of the dredge slurry, prior to hydrocyclone removal of the coarse fraction, was an average of approximately 8.4% with a range from 3.5% to 14.4%.

8.1.4 Volume of Sediment Removed

The targeted sediment volume for removal, as stated in the AOC, was 50,000 *in-situ* cubic yards. Figure 11 illustrates the cumulative sediment volume removed based on daily production calculations provided by Sevenson Environmental Services. Based on bathymetric surveys, as described in Section 6.3, the actual volume of sediment removed from SMU 56/57 in 2000 was 50,316 cu yd.

Figure 12 illustrates the post-dredge river bottom elevations. The post-dredge elevations in Figure 12, when compared to the pre-dredge river bottom elevations from August 14, 2000 (Figure 7), account for the 50,316 cu yd of sediment removed.

8.1.5 Mass of Sediment Removed

Approximately 51,613 tons of dewatered sediment was transported to the landfill. This dewatered sediment had an average solids content of approximately 59%.

8.1.6 Mass of PCBs Removed

The dewatered sediments were segregated on-site into separate piles prior to off-site disposal. Generally, the dewatered sediments generated during a given 24-hour workday constituted a separate pile. A composite sample of each pile, with each composite consisting of 10 subsamples, was obtained directly from the press conveyor belt as dewatered sediment was generated from the presses.

A PCB removal mass estimate from SMU 56/57 can be obtained using the average percent solids of the dewatered sediment (59%), the average PCB concentration of that material (11 ppm), and the tonnage transported to the landfill (51,613 tons). Using these data, approximately 670 pounds of PCBs were removed during the 2000 SMU 56/57 Project.

During the 1999 Demonstration Project at SMU 56/57 approximately 1,441 pounds of PCBs were removed from the site (USGS, 2000). Combining 1999 and 2000 data results in a total removal mass estimate of 2,111 pounds of PCBs.

The pre-project estimate of the mass of PCBs from the subunits dredged at SMU 56/57 in 1999 and 2000 was 3,349 pounds (Montgomery Watson, 1998). The *in-situ* pre-project PCB mass estimate was derived using core sampling data for PCB concentrations and dry bulk density. These data were analyzed using GIS software ArcView and Spatial Analyst to generate pre-project PCB mass estimates for SMU 56/57 (Montgomery Watson, 1998).

Compared to the pre-project PCB mass estimates obtained from analyses of *in-situ* sediment data, the PCB mass estimates resulting from analyses of the removed and dewatered sediment data are judged to be superior estimates. This judgement is made since considerably more samples are taken from the dewatered sediments, and also because the on-shore operations generate a homogenous sediment mixture which, when sampled, yields data more characteristic of the original sediment material.

8.2 Sediment Dewatering

Sediment dewatering was accomplished at the on-shore dewatering facility with coarse fraction removal from the slurry by hydrocyclone, and plate and frame pressing to generate a dewatered filter cake. After removal of the coarse fraction, the average percent solids of the slurry entering the presses was approximately 7.3%, with a range of 3.1 to 13.6%, as reported by Sevenson Environmental Services.

The percent solids of the filter cake was tested in Foth & Van Dyke's on-site laboratory at the frequency described in Section 6.6. A total of 70 filter cake and 8 sand/gravel coarse fraction samples were analyzed for percent solids. The filter cake solids averaged approximately 59%, with a range of 49.1 to 66.0, as shown in Figure 13 and Table 2. One sample was below the project's specification of 50% solids. When the solids value of < 50% solids was encountered, the contractor was immediately notified and measures were taken to increase solids content. The landfill was also notified; however, the small amount of filter cake at <50% solids caused no landfill operational problems. The coarse fraction solids averaged approximately 76%, with a range of 57.5 to 81.2%.

Foth & Van Dyke analyzed seventy filter cake samples and eight coarse fraction samples for free liquids (Table 2). Free liquids were not encountered in any of the samples.

Filter cake and coarse fraction samples were also analyzed for PCBs by Method 8082, as described in Section 6.6. Figure 14 and Table 3 show the PCB concentration ranged from 0.48 ppm to 32 ppm in the filter cake and coarse fraction materials. The average PCB concentration was calculated as 11.0 ppm from these samples. Therefore, using the on-site PCB data from the dewatered stockpiled sediment, the sediment disposed of in Cell 12A in 2000 did not demonstrate TSCA (× 50 ppm PCB) characteristics.

8.3 Sediment Hauling and Disposal

Prior to loading into trucks, the dewatered sediment was sampled and analyzed for percent solids and free liquids. Each truckload was manifested as described in Section 6.12, decontaminated with pressure washers, and tarped prior to leaving the site. The trucks then hauled the sediment to Cell 12A.

A total of 2,484 truckloads of sediment with a total sediment weight of 51,613 tons were transported and disposed of in Cell 12A. Figure 15 illustrates the tons of sediment trucked to the landfill on a daily basis. The trucks were decontaminated by pressure washing at the landfill and tarped for their return trip to the site.

8.4 Water Treatment

8.4.1 Volume of Water Processed

The water treatment system was previously described in Section 5. Over the project duration, approximately 66,329,000 gallons of water were treated and discharged back to the Fox River, as reported by Sevenson Environmental Services (Figure 16).

8.4.2 Effluent Test Results

The effluent from the water treatment system was tested as described in Section 6.7. Figures 17 through 22 and Table 4 summarize the effluent test results for BOD, total suspended solids, pH, PCBs, mercury, and turbidity.

All PCB results were no detect values below established limits.

All effluent BOD results were below the daily maximum target concentration of 30 mg/l. Weekly average BOD concentrations were periodically above the target concentration of 2 mg/l. However, these weekly averages would not have caused a violation of the State's water quality standard for dissolved oxygen, since Fort James Green Bay – West mill at all times during the 2000 SMU 56/57 Project discharged only a fraction of its allowable BOD. The allowable BOD discharge from the Green Bay-West mill is based on a "water quality based effluent limit" for at least a portion of the project period. The Green Bay-West mill discharges wastewater near SMU 56/57.

Total suspended solids concentrations were within target concentrations, with the exception of one spike that occurred on November 15, 2000 at the start of demobilization operations. Effluent pH values were all within target concentrations during the project. There were three low-level detects of mercury in the effluent, all at levels well below the project target concentration of 1.7 ppb.

November 16, 2000 was the last day of effluent discharge to the Fox River. After that date, and prior to completion of decontamination activities, all water collected on the asphalt pad was treated through bag filters and carbon adsorption, removed by tanker truck and further treated in the Fort James wastewater treatment plant, and then discharged to the river.

8.5 Sand Cover Placement

Following dredging and verification sampling in each section of SMU 56/57, a sand cover layer was placed over each section's dredging limits. The total area receiving sand cover placement was approximately 7.4 acres, as shown in Figure 23. The methods of sand cover placement are described in Section 6.9.

8.5.1 Sand Source and Pre-Use Testing

The clean sand used for covering the dredged areas was hauled to the site by McKeefry & Son and stockpiled on-site adjacent to SMU 56/57. The sand was fine to medium grained.

The sand was sampled on August 24, 2000, prior to use as cover material. The sample consisted of 12 subsamples collected from random locations within the stockpile, composited, and analyzed for PCBs by USEPA Method 8082. The test result showed no PCB detections in the cover sand stockpile. The test result is included in Table 3.

8.5.2 Sand Volume and Documented Thickness

The AOC required Fort James to place a minimum of 6 inches of cover sand in dredged areas achieving a final PCB concentration of 1 to 10 ppm in the surficial sediment. Those areas achieving PCB final concentrations of less than 1 ppm in the surficial sediment could be left uncovered.

Fort James elected to place a minimum of 6 inches of cover sand in all dredged areas to serve as a discernable layer in the future to identify the extent of dredging activities for the 2000 SMU 56/57 Project.

Fort James also directed the contractor to place in excess of 6 inches of sand in side slope areas. Figure 23 shows the locations of the 102 sand thickness measurements and the measured sand thickness at each location. Sand thickness measuring methods are described in Section 6.9. Sand thickness measurements are summarized in Table 5.

A total of 13,500 cu yd of cover sand was placed following dredging activities. The average sand thickness measured was approximately 8 inches, with a range from 6 to 14 inches. USEPA's independent oversight sampling confirmed that sand had been appropriately placed at SMU 56/57.

8.6 Project Schedule

Completing the dredging operations within 60 days was a critical component in making the project successful. The project management activities described in Section 7 were essential in keeping the project on schedule. Figure 24 displays the overall project schedule commencing with signing of the AOC on May 30, 2000 and ending with suspension of demobilization activities on December 15, 2000.

9. Sediment Sampling Results

9.1 Pre-Dredge Conditions

The 2000 SMU 56/57 Project pre-dredge sediment topography is shown on Figure 7. USEPA reported that the average PCB concentration in the top 4 inches of sediment at completion of the 1999 Demonstration Project was 116 ppm, with a maximum measured PCB concentration of 310 ppm (USEPA, 2000).

9.2 Post-Dredge Conditions

The post-dredge sediment topography for the 2000 SMU 56/57 Project is shown in Figure 12. The average post-dredge PCB concentration in the top 4 inches of sediment was 2.2 ppm, with a range from “no detect” (less than 0.038 ppm) to 9.5 ppm. PCBs were analyzed by USEPA SW 846 reference method 8082.

Table 6 summarizes the results of the post-dredge confirmation sampling for the 2000 SMU 56/57 Project. Aroclor 1242 was the predominant PCB Aroclor identified by the laboratory. All samples were collected from the top 4 inches of sediment, as described in Section 6.8. PCB sediment sampling results are also illustrated on Figure 25.

10. Quality Control/Quality Assurance Reporting

10.1 Data Reporting

M.A. Kuehl Company (MAK) performed data validation according to *National Functional Guidelines for Organic Data Review* (October, 1999, EPA-540/R-99/008), *National Functional Guidelines for Inorganic Data Review* (February, 1994, EPA-540/R-94-013) and the relevant data quality objectives (DQOs) developed in Section 3 of the *QAPP/SAP*, (Hart Crowser, 2000a).

Data were validated as received in batches from the laboratories. All data collected as part of this monitoring plan were consistent with the *QAPP/SAP*.

A full data validation was completed of 20% of the data, and a forms review was conducted of the remaining 80% of the data. In addition, a full validation was conducted on the first data package received from each laboratory to ensure all requirements of the *QAPP/SAP* were being met. Validation of laboratory data packages included an assessment of compliance with method guidelines and project specific requirements. Specifically included were an evaluation of holding times, blank contamination, calibration requirements (initial and continuing), surrogate spike recovery, matrix spike and duplicate recoveries, instrument performance, and compound identification and quantitation, as applicable.

The following steps were included as part of the data validation process:

- Evaluation of completeness of data package. All data packages were received complete.

- Verification that field chain-of-custody (COC) forms were completed and that samples were handled properly. All samples were handled properly with the required COC documents.

- Verification that holding times were met for each parameter. Holding times were not exceeded during this project.

- Verification that parameters were analyzed according to methods specified. All parameters were analyzed by the methods specified in the QAPP/SAP.

- Review of QA/QC data (i.e., assurance that duplicates, blanks, and spikes were analyzed on the required number of samples as specified in the method; verification that duplicate and matrix spike recoveries were acceptable). Discussed later in this section.

- Investigation of anomalies identified during review. No significant anomalies were identified during the data validation.

The data validation efforts were documented and submitted in the form of a written technical memorandum with supporting documentation supplied as check sheets by MAK.

The data validator provided five data validation technical memoranda throughout the project. They included every individual analytical result, including field duplicates (or replicates) and laboratory matrix spike and matrix spike duplicates.

Data qualifiers are appended to each reported analytical result, and analytical results are reported only to the appropriate number of significant figures, as determined by the data validator. The data validator has added data qualifiers to the data. For example:

- Undetected analytical results are reported as less than the detection limit.

- Different detection limits have been reported for the same sample (e.g., for field duplicates); the lowest detection limit is reported in data summary reports.

Table 7 shows all of the types of QC samples that were analyzed during this project, and is a comparison with Table 3-1 of the *QAPP/SAP* (which estimated the number of samples to be performed, including QC samples). Table 7 shows the required and performed numbers of QC samples for sediments (residual sediments and dewatered sediment) and waters (effluent water and water column samples) for each of the analytes measured. Rinse blanks were not performed for sediment samples because dedicated sampling devices (polybutyrate core barrels and homogenization equipment) were used throughout the project. Field duplicates of residual sediments were performed through a split of sediment samples with USEPA. Lab duplicates are not done for PCB analyses because matrix spike/matrix spike duplicates (MS/MSD) pairs are analyzed. MS/MSDs are not performed for TSS, pH, and BOD_5.

In addition to what is presented in Table 7, laboratory control samples were analyzed at a high frequency for PCBs in both sediments and water; 60 and 41, respectively and $BOD_{5,}$ 10 laboratory control samples. A laboratory control sample (also sometimes called a spiked bank) is an analytical sample that contains all reagents and is spiked with compounds of interest, but does not contain any sample matrix.

11. Site Closeout Activities

Demobilization of equipment and materials from the 2000 SMU 56/57 Project are mostly complete. The equipment and materials from the water-based operation were completely demobilized in November 2000, which included all of the sheet pile, silt curtain, and piping associated with the water-based operation. Equipment and materials from the land-based operation were decontaminated and demobilized by the contractor. Freezing conditions prevented completing the entire land-based demobilization work. A single 20,000 gallon tank and packaged water treatment system remain on-site to complete any further demobilization activities during the spring of 2001.

12. Project Cost

This section describes the costs for the 2000 SMU 56/57 Project, including an analysis of the direct costs incurred by Fort James and an analysis of the total costs of the project after considering the value of the in-kind services provided by Fort James.

Costs cited in this section are based primarily on invoices for services rendered. However, some activities are not totally invoiced and some activities remain to be completed; therefore, the information presented in this section represents a good faith estimate of total costs incurred in complying with the AOC.

12.1 Direct Cost

The direct or out-of-pocket costs to Fort James for the design, construction, and implementation of the project are as follows:

Site Improvement Work	$ 355,000
Dredging, Dewatering, Water Treatment	5,515,900
Load and Transport to Landfill	173,000
Disposal ($21.00/ton – cost of landfill)	1,083,900
Operation of Landfill	71,100
Engineering and Project Management	981,100
Total Direct Cost	$8,180,000

Cost estimates are based upon the 50,316 *in-situ* cubic yards removed from the Fox River and dewatered and transported to the landfill. 51,613 tons of materials were disposed at Cell 12A, which included the dewatered sediment and all disposable materials used in the dredging and dewatering process (personal protective equipment, silt curtains, etc.).

The disposal cost was calculated as a pro-rated portion (2000 SMU 56/57 Project disposal vs. 1999 Demonstration Project disposal) of the direct costs to develop Cell 12A. The construction cost and the estimated closure cost of Cell 12A equals $1,717,676. Cell 12A was dedicated to SMU 56/57 dewatered sediments and associated wastes. In 1999 26,927 tons were disposed; plus, residual cleanup of the 1999 project resulted in an additional 3,222 tons disposed of in 2000. As stated, 51,613 tons were disposed of into Cell 12A as part of the 2000 SMU 56/57 Project. Therefore, the total landfilled sediment and SMU 56/57 associated waste disposed of in Cell 12A was 81,762 tons for a cost of $1,717,676, which, divided by 81,762 tons, equals $21.00 per ton. The cost of landfill disposal for the 2000 SMU 56/57 Project is therefore calculated as 51,613 tons @ $21.00/ton or $1,083,900.

12.2 Additional Project Cost

The out-of-pocket costs to complete the 2000 SMU 56/57 Project, as provided, depict a cost that is not truly representative of the actual cost to conduct this project, since it does not include the value of the in-kind services supplied by Fort James. The following is an analysis of the value of those services and, as such, provides a more realistic total cost for a dredging project of this type.

12.2.1 Cost of Property Used During Project

During the project, Fort James provided the use of 27.3 acres (Former Shell Terminal) located along the Fox River adjacent to SMU 56/57. The annual rental value of the Former Shell Terminal is estimated to be 15% of the value of the property (assuming lessor pays real estate taxes). According to an informal analysis of property values, the sales price of the Former Shell Property is approximately $90,000 per acre. Therefore, the total value of the property is $2,457,000. Since one year transpired from the time the first site work occurred until the property will be completely demobilized and returned to the owner for commercial use, the cost of the use of the Former Shell Terminal for this project is $368,500 ($2,457,000 x 15%).

12.2.2 Cost of Disposal in Cell 12A

As provided above, the estimated direct or out-of-pocket disposal cost of the material in Cell 12A was $21.00 per ton. The cost to dispose of the material at the Wayne Disposal Site (Bellevue, Michigan), the nearest alternative site licensed to accept TSCA waste material, is $141.00 per ton (estimate for transportation and disposal, January 2000). The incremental cost difference ($141.00 - $21.00) between disposal at the two landfills is $120.00. Therefore, the value of the disposal of the material at Cell 12A is $6,193,600 (51,613 tons x $120.00/ton) minus the transportation to, and operation of, Cell 12A ($6,193,600 minus $173,000 and minus $71,100), or $5,949,500.

12.2.3 Cost of Fort James Project Team

Fort James dedicated an internal Project Team to implement the 2000 SMU 56/57 Project. This team, under the direction of the Fort James Project Coordinator, consisted of all the necessary Fort James Engineering, Procurement, Accounting, and Construction Management personnel to accomplish the work in an efficient and cost-effective manner. The estimated cost for the Fort James project team was $405,100.

12.3 Total Project Cost

Summarizing, the total cost of the 2000 SMU 56/57 Project:

Total Direct Costs	$ 8,180,000
Rental Cost of the Former Shell Terminal Property	368,500
Value of Cell 12A Disposal	5,949,500
Fort James Project Team	405,100
Total Project Costs	$14,903,100

13. Project Performance vs. Objectives

The objectives of the project are detailed in the SOW, Attachment A to the AOC.

As described in the SOW, the horizontal extent of dredging in Phase I and Phase II included removing sediment from 30 individual subunits. The vertical extent of the dredging, as determined by the cleanup objectives, resulted in 28 of the subunits being dredged to cleanup objectives, and two of the subunits dredged to develop stable sideslopes for the dredge area. All 28 subunits met the cleanup objective of 10 ppm PCBs or less. Eleven of the subunits have PCB concentrations less than 1 ppm. All 30 subunits and any horizontal area (including sideslopes) impacted by the dredging operation received a sand cover of six or more inches.

The *in-situ* volume of sediment removed from the Fox River during this project was 51,613 cu yd, which was disposed of at Cell 12A. The landfill had been approved to receive dewatered sediments containing over 50 ppm PCBs. All dredged sediments were dewatered and made suitable for placement within Cell 12A.

All roads, staging areas, work pads and other infrastructures were constructed to accomplish the dredging, dewatering, stabilization, truck loading, truck washing, parking, and associated activities. All utilities, site security, and support services were provided to complete the project.

The on-shore area has been largely restored, and will be completely restored in the spring of 2001. In the interim, the site has been stabilized to eliminate any migration of residual material from the work pad area to the surrounding property.

All transport water, filtrate, stormwater captured on the workpad, truck decontamination water, and any other water that could have come into contact with the river sediment or the mechanical process to handle the sediment was collected, treated, and returned to the Fox River. Following treatment, these return waters met the water targets established for the project.

Though not formerly stated in the AOC and the SOW, the completion of the project in calendar year 2000 was a Fort James process design objective. In addition, the project was completed in a safe manner without a lost time accident.

Therefore, with the submittal of this Final Report, all of Fort James' obligations as provided in the AOC and SOW (except for certain continuing obligations as provided in the AOC (e.g., Section XIII "Record Retention") have been satisfied, and Fort James hereby submits that all work has been performed in accordance with the AOC.

14. Certification

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate and complete.

Kathleen M. Bennett

Kathleen M. Bennett
Vice President

January 26, 2001

Date

15. References

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Table 1

2000 Fox River SMU 56/57 Project
Effluent Monitoring Parameters

Parameters:	Target Effluent Concentration: Daily Maximum	Weekly Average	Monthly Average	Initial Monitoring Guidelines: Sample Frequency	Sample Type
Flow (MGD)	---	---	---	Daily	Continuous
BOD_5	30 mg/l	<2 mg/l	---	1 x Weekly	Grab
Total Suspended Solids	10 mg/l	---	5 mg/l	Daily	Composite
PH (s.u.)	6.0 daily min. 9.0 daily max.	---	---	Daily	Grab
PCBs	---	---	1.2 ug/l	2 x Weekly	Composite
Mercury	1.7 ug/l	0.0026 lb/day	3.4E-5 lb/day	2 x Weekly	Composite

Source: Hart Crowser, 2000b

Table 2

2000 Fox River SMU 56/57 Project
Dewatered Sediment Percent Solids and Paint Filter Test Data

Field Sample ID	Sand/Cake	Sample Date	% Solids[1]	Paint Filter
Start Up				
K40001S	Cake	8/25/00	57.3	Pass
Pilot Test				
GA40001P	Sand	8/25/00	81.2	Pass
K40002P	Cake	8/25/00	57.8	Pass
GA400029	Sand	8/25/00	57.5	Pass
K40003P	Cake	8/25/00	62.5	Pass
GA40003P	Sand	8/25/00	76.7	Pass
K40004P	Cake	8/25/00	54.1	Pass
K40005	Cake	8/26/00	66.0	Pass
Project Operation				
K40006 D1	Cake	8/27/00	55.9	Pass
K40007 D2	Cake	8/28/00	58.7	Pass
K40008 D3	Cake	8/29/00	58.7	Pass
K40009 D4	Cake	8/30/00	55.2	Pass
K40010 D5	Cake	8/30/00	59.5	Pass
K40011 D6	Cake	8/31/00	60.6	Pass
K40012 D7	Cake	9/1/00	58.2	Pass
K40013 D8	Cake	9/2/00	54.5	Pass
K40014 D9	Cake	9/3/00	57.8	Pass
K40015 D10	Cake	9/4/00	62.2	Pass
K40016 D11	Cake	9/6/00	56.7	Pass
K40017 D12	Cake	9/6/00	57.8	Pass
GA40004	Sand	9/7/00	76.5	Pass
K40018 D13	Cake	9/7/00	55.0	Pass

Table 2 *(Continued)*

Field Sample ID	Sand/Cake	Sample Date	% Solids[1]	Paint Filter
K40019 D14	Cake	9/9/00	58.2	Pass
K40020 D15	Cake	9/9/00	59.2	Pass
K40021 D16	Cake	9/10/00	60.3	Pass
K40022 D17	Cake	9/11/00	57.5	Pass
GA40005	Sand	9/12/00	76.4	Pass
40023 D18	Cake	9/12/00	60.3	Pass
K40024 D19	Cake	9/13/00	60.6	Pass
K40025 D20	Cake	9/14/00	61.0	Pass
K40026 D21	Cake	9/15/00	59.5	Pass
K40027 D22	Cake	9/16/00	59.6	Pass
K40028 D23	Cake	9/17/00	60.3	Pass
K40029 D24	Cake	9/18/00	59.8	Pass
K40030 D25	Cake	9/19/00	58.2	Pass
K40031 D26	Cake	9/20/00	60.3	Pass
GA40006	Sand	9/20/00	81.1	Pass
K40032 D27	Cake	9/21/00	64.6	Pass
K40033 D28	Cake	9/23/00	63.9	Pass
K40034 D29	Cake	9/23/00	61.9	Pass
K40035 D30	Cake	9/24/00	56.2	Pass
K40036 D31	Cake	9/25/00	56.0	Pass
K40037 D32	Cake	9/26/00	56.1	Pass
K40038 D33	Cake	9/27/00	57.7	Pass
K40039 D34	Cake	9/28/00	58.8	Pass
K40040 D35	Cake	9/29/00	59.8	Pass
K40041 D36	Cake	9/30/00	60.2	Pass
K40042 D37	Cake	10/1/00	58.6	Pass
K40043 D38	Cake	10/2/00	61.2	Pass
K40044 D39	Cake	10/3/00	60.4	Pass
K40045 D40	Cake	10/4/00	60.4	Pass
K40046 D41	Cake	10/5/00	64.0	Pass
K40047 D42	Cake	10/6/00	61.6	Pass
K40048 D43	Cake	10/7/00	59.6	Pass

Table 2 *(Continued)*

Field Sample ID	Sand/Cake	Sample Date	% Solids[1]	Paint Filter
GA4007	Sand	10/7/00	78.7	Pass
K40049 D44	Cake	10/8/00	61.8	Pass
K40050 D45	Cake	10/9/00	60.7	Pass
K40051 D46	Cake	10/10/00	60.9	Pass
K40052 D47	Cake	10/11/00	59.4	Pass
K40053 D48	Cake	10/12/00	61.5	Pass
K44054 D49	Cake	10/13/00	55.8	Pass
K40055 D50	Cake	10/14/00	57.9	Pass
K40056 D51	Cake	10/15/00	59.7	Pass
K44057 D52	Cake	10/16/00	57.2	Pass
K40058 D53	Cake	10/17/00	49.1	Pass
K40059 D54	Cake	10/18/00	61.5	Pass
K40060 D55	Cake	10/19/00	63.9	Pass
K40061 D56	Cake	10/20/00	65.4	Pass
K40062 D57	Cake	10/21/00	61.5	Pass
K40063 D58	Cake	10/22/00	50.2	Pass
K40064 D59	Cake	10/23/00	58.3	Pass
K40065 D60	Cake	10/24/00	58.0	Pass
GA4008	Sand	10/25/00	79.7	Pass
K40066 D61	Cake	10/25/00	62.1	Pass
K40067 D62	Cake	10/26/00	62.9	Pass
K40068 D63	Cake	10/27/00	55.2	Pass
K40069 D66	Cake	10/31/00	62.2	Pass
K40070 D67	Cake	10/31/00	61.8	Pass
QA/QC Samples				
K40023 D18 Dup	Cake	9/12/00	60.7	Pass

[1] Samples analyzed in Foth & Van Dyke on-site laboratory

Prepared by: JBH1
Checked by: DMR

Table 3

2000 Fox River SMU 56/57 Project

Cover Sand and Filter Cake Dewatered Sediment Data

Field Sample ID	Date Sampled	Total Solids (%)	Aroclor 1016 (µg/kg)	Aroclor 1221 (µg/kg)	Aroclor 1232 (µg/kg)	Aroclor 1242 (µg/kg)	Aroclor 1248 (µg/kg)	Aroclor 1254 (µg/kg)	Aroclor 1260 (µg/kg)
Cover Sand									
Cover Sand 1	08/24/00	94.9	23 U	23 U	23 U	23	23 U	23 U	23 U
Coarse Material									
GA40004	09/07/00	77.1	140 U	140 U	140 U	1,400	140 U	140 U	140 U
GA40005	09/13/00	72.3	300 U	300 U	300 U	4,000	300 U	300 U	300 U
GA40006	09/20/00	81.9	130 U	130 U	130 U	2,100	130 U	130 U	130 U
GA40007	10/07/00	78.8	280 U	280 U	280 U	1,100	280 U	280 U	280 U
GA4008	10/25/00	79.9	55 U	55 U	55 U	480	55 U	55 U	55 U
Filter Cake									
Start Up									
K40001S	08/25/00	58.8	1900 U	1900 U	1900 U	19,000	1900 U	1900 U	1900 U
Pilot Test									
K40005P	08/26/00	63.1	1000 U	1000 U	1000 U	16,000	1000 U	1000 U	1000 U
Project Operation									
K40006D1	08/27/00	57.5	770 U	770 U	770 U	15,000	770 U	770 U	770 U
K40008D3	08/29/00	60.2	1500 U	1500 U	1500 U	22,000	1500 U	1500 U	1500 U
T30010D3	08/28/00	59.2	1100 U	1100 U	1100 U	16,000	1100 U	1100 U	1100 U
K40009D4	08/30/00	52.5	2100 U	2100 U	2100 U	28,000	2100 U	2100 U	2100 U
K40010D5	08/30/00	59.2	3700 U	3700 U	3700 U	23,000	3700 U	3700 U	3700 U
K40011D6	08/31/00	60.3	1800 U	1800 U	1800 U	12,000	1800 U	1800 U	1800 U
K40012D7	09/01/00	58.6	1900 U	1900 U	1900 U	19,000	1900 U	1900 U	1900 U
K40013D8	09/02/00	54.7	2000 U	2000 U	2000 U	19,000	2000 U	2000 U	2000 U
K40014D9	09/03/00	61.8	1800 U	1800 U	1800 U	11,000	1800 U	1800 U	1800 U
K40015D10	09/04/00	58.4	1900 U	1900 U	1900 U	9,900	1900 U	1900 U	1900 U
K40016D11	09/06/00	58.0	1900 UJ	1900 UJ	1900 UJ	17,000 J	1900 UJ	1900 UJ	1900 UJ

Table 3 *(Continued)*

Field Sample ID	Date Sampled	Total Solids (%)	Aroclor 1016 (µg/kg)	Aroclor 1221 (µg/kg)	Aroclor 1232 (µg/kg)	Aroclor 1242 (µg/kg)	Aroclor 1248 (µg/kg)	Aroclor 1254 (µg/kg)	Aroclor 1260 (µg/kg)
K40017D12	09/06/00	59.0	1900 U	1900 U	1900 U	14,000	1900 U	1900 U	1900 U
K40018D13	09/07/00	72.1	1500 U	1500 U	1500 U	11,000	1500 U	1500 U	1500 U
K40019D14	09/09/00	57.6	1900 U	1900 U	1900 U	20,000	1900 U	1900 U	1900 U
K40020D15	09/10/00	59.7	1800 U	1800 U	1800 U	15,000	1800 U	1800 U	1800 U
K40021D16	09/10/00	60.4	1800 U	1800 U	1800 U	11,000	1800 U	1800 U	1800 U
K40022D17	09/11/00	58.9	1900 U	1900 U	1900 U	15,000	1900 U	1900 U	1900 U
K40023D18	09/13/00	59.1	1900 U	1900 U	1900 U	11,000	1900 U	1900 U	1900 U
K40024D19	09/13/00	61.0	1800 U	1800 U	1800 U	15,000	1800 U	1800 U	1800 U
K40025D20	09/14/00	62.2	350 U	350 U	350 U	8,000	350 U	350 U	350 U
K40026D21	09/15/00	59.6	1800 U	1800 U	1800 U	14,000	1800 U	1800 U	1800 U
K40027D22	09/16/00	61.1	1800 U	1800 U	1800 U	17,000	1800 U	1800 U	1800 U
K40028D23	09/17/00	58.8	1900 U	1900 U	1900 U	13,000	1900 U	1900 U	1900 U
K40029D24	09/18/00	60.6	1800 U	1800 U	1800 U	10,000	1800 U	1800 U	1800 U
K40030D25	09/19/00	58.8	1500 U	1500 U	1500 U	7,700	1500 U	1500 U	1500 U
K40031D26	09/20/00	56.3	1600 U	1600 U	1600 U	9,700	1600 U	1600 U	1600 U
K40032D27	09/21/00	64.6	1400 UJ	1400 UJ	1400 UJ	8,300 J	1400 UJ	1400 UJ	1400 UJ
K40033D28	09/23/00	64.2	34 U	34 U	34 U	4,900	34 U	34 U	34 U
K40034D29	09/23/00	62.2	1100 U	1100 U	1100 U	5,700	1100 U	1100 U	1100 U
K40035D30	09/24/00	56.6	1200 U	1200 U	1200 U	7,600	1200 U	1200 U	1200 U
K40036D31	09/25/00	56.0	790 U	790 U	790 U	6,100	790 U	790 U	790 U
K40037D32	09/26/00	56.5	780 U	780 U	780 U	4,500	780 U	780 U	780 U
K40038D33	09/27/00	58.1	380 U	380 U	380 U	3,000	380 U	380 U	380 U
K40039D34	09/28/00	59.7	370 U	370 U	370 U	1,800	370 U	370 U	370 U
K40040D35	09/29/00	60.7	360 U	360 U	360 U	2,200	360 U	360 U	360 U
K40041D36	09/30/00	60.9	360 U	360 U	360 U	4,800	360 U	360 U	360 U
K40042D37	10/01/00	59.6	370 U	370 U	370 U	6,100	370 U	370 U	370 U
K40043D38	10/02/00	61.1	360 U	360 U	360 U	6,200	360 U	360 U	360 U
K40044D39	10/03/00	60.5	360 U	360 U	360 U	5,700	360 U	360 U	360 U
K40045D40	10/04/00	60.1	370 U	370 U	370 U	5,500	370 U	370 U	370 U
K40046D41	10/05/00	64.7	340 U	340 U	340 U	2,800	340 U	340 U	340 U
K40047D42	10/06/00	65.6	340 U	340 U	340 U	2,700	340 U	340 U	340 U

Table 3 *(Continued)*

Field Sample ID	Date Sampled	Total Solids (%)	Aroclor 1016 (µg/kg)		Aroclor 1221 (µg/kg)		Aroclor 1232 (µg/kg)		Aroclor 1242 (µg/kg)	Aroclor 1248 (µg/kg)		Aroclor 1254 (µg/kg)		Aroclor 1260 (µg/kg)	
K40048D43	10/07/00	58.4	380	U	380	U	380	U	5,600	380	U	380	U	380	U
K40049D44	10/08/00	62.7	350	U	350	U	350	U	5,800	350	U	350	U	350	U
K40050D45	10/09/00	61.5	360	U	360	U	360	U	5,200	360	U	360	U	360	U
K40051D46	10/10/00	61.6	360	U	360	U	360	U	3,300	360	U	360	U	360	U
K40052D47	10/11/00	55.5	400	U	400	U	400	U	6,100	400	U	400	U	400	U
K40053D48	10/12/00	60.4	360	U	360	U	360	U	6,000	360	U	360	U	360	U
K40054D49	10/13/00	57.6	1100	U	1100	U	1100	U	15,000	1100	U	1100	U	1100	U
K40055D50	10/14/00	57.9	1100	U	1100	U	1100	U	13,000	1100	U	1100	U	1100	U
K40056D51	10/15/00	58.2	1100	U	1100	U	1100	U	13,000	1100	U	1100	U	1100	U
K40057D52	10/16/00	58.3	1100	U	1100	U	1100	U	17,000	1100	U	1100	U	1100	U
K40058D53	10/17/00	51.6	1300	U	1300	U	1300	U	25,000	1300	U	1300	U	1300	U
K40059D54	10/18/00	60.6	730	U	730	U	730	U	10,000	730	U	730	U	730	U
K40060D55	10/19/00	63.2	350	U	350	U	350	U	5,100	350	U	350	U	350	U
K40061D56	10/20/00	66.4	990	U	990	U	990	U	7,300	990	U	990	U	990	U
K40062D57	10/21/00	64.3	1000	U	1000	U	1000	U	11,000	1000	U	1000	U	1000	U
K40063D58	10/22/00	51.4	2600	U	2600	U	2600	U	32,000	2600	U	2600	U	2600	U
K40064D59	10/23/00	56.4	1200	U	1200	U	1200	U	19,000	1200	U	1200	U	1200	U
K40065D60	10/24/00	58.6	1100	U	1100	U	1100	U	17,000	1100	U	1100	U	1100	U
K40066D61	10/25/00	63.2	1000	U	1000	U	1000	U	9,200	1000	U	1000	U	1000	U
K40067D62	10/26/00	63.3	1000	U	1000	U	1000	U	7,000	1000	U	1000	U	1000	U
K40068D63	10/27/00	54.0	1200	U	1200	U	1200	U	20,000	1200	U	1200	U	1200	U
K40069D66	10/31/00	61.5	1100	U	1100	U	1100	U	8,100	1100	U	1100	U	1100	U
K40070D67	10/31/00	62.9	1000	U	1000	U	1000	U	8,000	1000	U	1000	U	1000	U
QA\QC Samples															
K40023D18DUP	09/13/00	62.1	1800	U	1800	U	1800	U	9,400	1800	U	1800	U	1800	U
K40024D19RB	09/13/00	--	0.26	U	0.26	U	0.26	U	0.26	0.26	U	0.26	U	0.26	U
K40024D19FB	09/13/00	--	0.26	U	0.26	U	0.26	U	0.26	0.26	U	0.26	U	0.26	U

Notes.
Data qualification codes used by MAKuehl Co., for data validation:
U Undetected at the detection limit shown.
-- Analysis not applicable.
J Estimated value between the LOD and LOQ.

Prepared by: FJA
Checked by: BDH
Verified by: LAH

Table 4

2000 Fox River SMU 56/57 Project
Process Water Effluent Data

							PCBs						
Field Sample ID	Date Sampled	TSS (mg/L)	pH (s.u.)	Lab Turbidity (NTU)	Hg (ng/L)	BOD (mg/L)	Aroclor 1016 (µg/L)	Aroclor 1221 (µg/L)	Aroclor 1232 (µg/L)	Aroclor 1242 (µg/L)	Aroclor 1248 (µg/L)	Aroclor 1254 (µg/L)	Aroclor 1260 (µg/L)
Start Up													
T30001S	08/25/00	5.0	8.3	2.7	--	--	--	--	--	--	--	--	--
Pilot Test													
T30002P	08/25/00	4.0	8.2	0.78	0.1 U	--	--	--	--	--	--	--	--
T30003P	08/25/00	4.0	8.2	0.36	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30004P	08/25/00	2.0 J	8.2	0.30	0.1 U	--	--	--	--	--	--	--	--
T30005	08/25/00	--	--	--	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30005P	08/25/00	2.0 J	8.2	0.44	--	--	--	--	--	--	--	--	--
T30006P	08/25/00	2.0 J	8.2	0.15	0.1 U	--	--	--	--	--	--	--	--
T30007P	08/25/00	2.0 J	8.2	0.35	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
Project Operation													
T30008D1	08/26/00	10	8.2	3.9 J	--	--	--	--	--	--	--	--	--
T30009D2	08/27/00	7.0	8.1	5.1	--	--	--	--	--	--	--	--	--
T30010D3	08/28/00	7.0	8.2	5.5	--	--	--	--	--	--	--	--	--
T30011D4	08/29/00	5.0 U	8.0	5.1	--	--	--	--	--	--	--	--	--
T30012D5	08/30/00	7.0	7.8	2.6	0.1 U	3.3	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30013D6	08/31/00	6.0	8.1	1.7	--	--	--	--	--	--	--	--	--
T30014D7	09/01/00	6.0	8.0	1.2 J	0.1 U	--	--	--	--	--	--	--	--
T30015D8	09/02/00	8.0	8.2	32 J	--	--	--	--	--	--	--	--	--
T30016D9	09/03/00	6.0	8.2	0.94	--	--	--	--	--	--	--	--	--
T30017D10	09/04/00	7.0	8.1	0.97	--	--	--	--	--	--	--	--	--
T30018D11	09/05/00	4.0	8.2	1.2	--	--	--	--	--	--	--	--	--
T30019D12	09/06/00	4.0	8.1	0.64	0.1 U	8.1	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30020D13	09/06/00	4.0 BU	8.1	0.61	0.1 U	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30021D14	09/08/00	8.0	8.2	0.52	--	--	--	--	--	--	--	--	--
T30022D15	09/09/00	4.0	8.1	1.6 J	--	--	--	--	--	--	--	--	--
T30023D16	09/10/00	3.0 J	8.1	0.90	--	--	--	--	--	--	--	--	--
T30024D17	09/11/00	3.0 J	8.1	1.9	--	--	--	--	--	--	--	--	--
T30025D18	09/12/00	2.0 J	8.1	1.2	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30026D19	09/13/00	4.0	8.0	0.76	0.13	2.0 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30027D20	09/14/00	4.0	8.0	0.98	0.1 U	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30028D21	09/15/00	3.0	7.9	0.96 JB	--	--	--	--	--	--	--	--	--
T30029D22	09/16/00	3.0	8.0	1.2	--	--	--	--	--	--	--	--	--

Table 4 *(Continued)*

Field Sample ID	Date Sampled	TSS (mg/L)	pH (s.u.)	Lab Turbidity (NTU)	Hg (ng/L)	BOD (mg/L)	PCBs Aroclor 1016 (µg/L)	Aroclor 1221 (µg/L)	Aroclor 1232 (µg/L)	Aroclor 1242 (µg/L)	Aroclor 1248 (µg/L)	Aroclor 1254 (µg/L)	Aroclor 1260 (µg/L)
T30030D23	09/17/00	3.0	7.9	0.96	0.1 U	--	--	--	--	--	--	--	--
T30031D24	09/18/00	4.0	8.0	0.90	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30032D25	09/19/00	2.0 J	8.1	0.73	--	--	--	--	--	--	--	--	--
T30033D26	09/20/00	3.0 J	8.0	0.99	0.1 U	24	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30034D27	09/21/00	5.0	8.1	0.56	--	--	--	--	--	--	--	--	--
T30035D28	09/22/00	2.0 J	8.0	0.38 J	--	--	--	--	--	--	--	--	--
T30036D29	09/23/00	0.9 J	8.1	0.85	--	--	--	--	--	--	--	--	--
T30037D30	09/24/00	2.0 QJ	8.0	0.96	--	--	--	--	--	--	--	--	--
T30038D31	09/25/00	1.0 U	8.1	0.47	0.1 U	2.0 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30039D32	09/26/00	1.0 U	7.9	0.80	--	--	--	--	--	--	--	--	--
T30040D33	09/27/00	1.0 U	8.2	2.3 BU	--	--	--	--	--	--	--	--	--
T30041D34	09/28/00	3.0 QJ	8.0	1.4	0.1 U	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30042D35	09/29/00	1.0 J	8.0	0.57	--	--	--	--	--	--	--	--	--
T30043D36	09/30/00	0.9 J	7.8	1.7 J	--	--	--	--	--	--	--	--	--
T30044D37	10/01/00	1.1 J	7.8	3.7	--	--	--	--	--	--	--	--	--
T30045D38	10/02/00	0.82 J	7.9	1.2	0.1 U	5.0 JB	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30046D39	10/03/00	1.1 J	8.1	1.1	--	--	--	--	--	--	--	--	--
T30047D40	10/04/00	0.82 J	8.1	0.60	0.1 U	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30048D41	10/05/00	1.6	8.1	0.68	--	--	--	--	--	--	--	--	--
T30049D42	10/06/00	1.1 J	7.9 J	0.52 J	--	--	--	--	--	--	--	--	--
T30050D43	10/07/00	0.81 J	--	0.58 J	--	--	--	--	--	--	--	--	--
T30051D44	10/08/00	0.75 J	8.2	0.59	--	--	--	--	--	--	--	--	--
T30052D45	10/09/00	0.67 J	8.2	0.53	0.1 U	2.0 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30053D46	10/10/00	1.1 J	7.9	0.74	--	--	--	--	--	--	--	--	--
T30054D47	10/11/00	1.1 J	7.8	0.91	0.1	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30055D48	10/12/00	1.0 J	8.1	0.8	--	--	--	--	--	--	--	--	--
T30056D49	10/13/00	1.1 J	8.0	--	--	--	--	--	--	--	--	--	--
T30057D50	10/14/00	1.6	8.4	--	--	--	--	--	--	--	--	--	--
T30058D51	10/15/00	1.1 J	8.4	--	--	--	--	--	--	--	--	--	--
T30059D52	10/16/00	1.0 J	8.4	--	--	--	--	--	--	--	--	--	--
T30060D53	10/17/00	2.0	7.8	1.1	0.17	13.0	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30061D54	10/18/00	1.6	8.1	--	--	--	--	--	--	--	--	--	--
T30062D55	10/19/00	1.3	8.1	--	--	--	--	--	--	--	--	--	--
T30063D56	10/20/00	2.0	8.2	--	--	--	--	--	--	--	--	--	--
T30064D57	10/21/00	1.1 J	7.7	--	--	--	--	--	--	--	--	--	--
T30065D58	10/22/00	1.1 J	7.8	--	--	--	--	--	--	--	--	--	--
T30066D59	10/23/00	1.9	7.9	2.0	--	4.0	--	--	--	--	--	--	--
T30067D60	10/24/00	1.2 J	7.9	--	0.1 U	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30068D61	10/25/00	1.2 J	7.9	--	--	--	--	--	--	--	--	--	--

Table 4 *(Continued)*

Field Sample ID	Date Sampled	TSS (mg/L)	pH (s.u.)	Lab Turbidity (NTU)	Hg (ng/L)	BOD (mg/L)	PCBs Aroclor 1016 (µg/L)	Aroclor 1221 (µg/L)	Aroclor 1232 (µg/L)	Aroclor 1242 (µg/L)	Aroclor 1248 (µg/L)	Aroclor 1254 (µg/L)	Aroclor 1260 (µg/L)
T30069D62	10/26/00	1.1 J	7.8	--	--	--	--	--	--	--	--	--	--
T30070D63	10/27/00	1.2 J	8.2	--	--	--	--	--	--	--	--	--	--
T30071D64	10/28/00	3.8	8.3	--	--	--	--	--	--	--	--	--	--
T30072D68	10/31/00	1.3 J	8.3	0.87	--	2.0 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30073D69	11/01/00	0.94 J	8.3	--	0.33	--	--	--	--	--	--	--	--
T30074D70	11/02/00	2.5	8.3	--	--	--	--	--	--	--	--	--	--
T30075D71	11/03/00	2.3	8.2	--	--	--	--	--	--	--	--	--	--
T30076D72	11/04/00	1 J	8.0	--	--	--	--	--	--	--	--	--	--
T30077D73	11/04/00	0.8 J	8.1	--	--	--	--	--	--	--	--	--	--
T30079D75	11/07/00	3.9 J	8.1	--	--	--	--	--	--	--	--	--	--
T30080D76	11/07/00	1.7 J	8.1	--	--	--	--	--	--	--	--	--	--
T30081D77	11/09/00	1.4 J	8.0	0.25	0.45 BU	2.0 U	--	--	--	--	--	--	--
T30082D78	11/10/00	0.91 J	8.1	--	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30083D79	11/11/00	1.1 J	8.2	--	--	--	--	--	--	--	--	--	--
T30084D81	11/13/00	3.1	8.3	--	--	--	--	--	--	--	--	--	--
T30085D83	11/15/00	41	8.3	--	--	--	--	--	--	--	--	--	--
T30086D84	11/16/00	10	8.3	--	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
DEMOB1	12/04/00	39	--	--	--	--	0.26 U	0.26 U	0.26 U	0.8	0.26 U	0.26 U	0.26 U
DEMOB2	12/04/00	49	--	--	--	--	0.26 U	0.26 U	0.26 U	1	0.26 U	0.26 U	0.26 U
QA/QC Samples													
T30002B	08/25/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30012D5B	08/30/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30014D7B	09/01/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30019D12B	09/06/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30020D13DUP	09/07/00	4.0	8.1	0.53	--	--	--	--	--	--	--	--	--
T30020D13B	09/07/00	3.0 J	5.9	0.06 U	--	--	--	--	--	--	--	--	--
T30025D18RB	09/12/00	1.0 U	6.0	0.20	--	--	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
T30026D19B	09/13/00	--	--	--	0.1 U	--	-- --	-- --	-- --	-- --	-- --	-- --	--
T30027D20B	09/14/00	--	--	--	0.1 U	--	-- --	-- --	-- --	-- --	-- --	-- --	--
T30027D20DUP	09/14/00	--	--	--	0.2	--	-- --	-- --	-- --	-- --	-- --	-- --	--
T30030D23B	09/17/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30033D26B	09/20/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30033D26DUP	09/20/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30040D33X	09/27/00	1.0 Q,J	8.3	1.2 BU	--	--	--	--	--	--	--	--	--
T30040D33FB	09/27/00	1.0 U	7.1	0.74 J	--	--	--	--	--	--	--	--	--
T30027D20B	09/14/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30027D20DUP	09/14/00	--	--	--	0.18	--	--	--	--	--	--	--	--
T30038D31B	09/25/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30041D34B	09/28/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--

Table 4 *(Continued)*

Field Sample ID	Date Sampled	TSS (mg/L)	pH (s.u.)	Lab Turbidity (NTU)	Hg (ng/L)	BOD (mg/L)	PCBs Aroclor 1016 (µg/L)	Aroclor 1221 (µg/L)	Aroclor 1232 (µg/L)	Aroclor 1242 (µg/L)	Aroclor 1248 (µg/L)	Aroclor 1254 (µg/L)	Aroclor 1260 (µg/L)
T30045D38B	10/02/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30047D40B	10/04/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30052D45B	10/09/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30054D47B	10/11/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30060D53B	10/17/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30066D59X	10/23/00	1.5	7.9	1.6	--	4.0	--	--	--	--	--	--	--
T30067D60B	10/24/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30073D69B	11/01/00	--	--	--	0.1 U	--	--	--	--	--	--	--	--
T30081D77B	11/09/00	--	--	--	0.41	--	--	--	--	--	--	--	--

Notes.
Data qualification codes used by MAKuehl Co., for data validation:
B Blank contamination.
BU Results less than 5X the associated contaminated blank and should be considered undetected.
J Estimated value between the LOD and the LOQ.
JB Estimated value associated with contaminated lab blank.
Q Value reported is greater than the limit of LOD and less than the LOQ.
U Undetected at the detection limit shown.
-- Analysis not applicable.

Prepared by: FJA
Checked by: SDJ
Verified by: LAH

Table 5

2000 Fox River SMU 56/57 Project
Sand Cover Thickness

Subunit #	Site Grid		Measured Sand Thickness	Date Measured	Method
	North	East			
Section 1					
12	1020	120	12.5"	10/06/00	B/C
12	0180	120	7"	10/06/00	B/C
12	1010	170	6"	10/04/00	B/C
12	1040	180	8"	09/27/00	B/C
23	1020	220	6"	10/06/00	Diver
23	1120	250	8"	10/06/00	B/C
23	1080	250	10.5"	10/06/00	B/C
23	1020	280	7"	10/06/00	B/C
34	1070	320	6"	10/06/00	Diver
34	1020	370	8.5"	10/06/00	B/C
13	920	120	8"	10/06/00	B/C
13	980	120	6"	10/04/00	B/C
13	980	170	6.5"	10/04/00	B/C
13	920	170	8"	10/06/00	B/C
24	920	220	10"	10/06/00	B/C
24	980	220	10.5"	10/06/00	Diver
24	980	280	8"	10/06/00	Diver
24	920	280	6" min.	10/15/00	Ponar
35	990	330	10"	10/06/00	B/C
35	920	330	6"	10/06/00	B/C
35	980	370	6"	10/06/00	B/C
45	950	420	8"	10/06/00	B/C
Section 2					
14	875	120	12"	10/12/00	B/C
14	875	175	6"	10/12/00	B/C
14	825	120	12"	10/12/00	B/C
14	825	175	11"	10/12/00	B/C
15	775	125	7+" (mixed w/gravel & sediment)	10/12/00	B/C
15	750	160	6+" (mixed w/sediment)	10/12/00	B/C
15	725	130	7"	10/13/00	B/C
25	875	225	7"	10/12/00	B/C

Table 5 *(Continued)*

Subunit #	Site Grid		Measured Sand Thickness	Date Measured	Method
	North	East			
25	875	275	13"	10/12/00	B/C
25	825	225	6+"	10/12/00	B/C
25	825	275	6+"	10/12/00	B/C
26	750	250	6"	10/12/00	B/C
36	875	325	10"	10/12/00	B/C
36	875	375	6" (mixed w/sediment)	10/12/00	B/C
36	825	325	6+" (mixed w/sediment)	10/12/00	B/C
36	825	375	8"	10/13/00	B/C
37	750	350	6"	10/12/00	B/C
46	850	450	6"	10/12/00	B/C
46	880	495	6"	10/12/00	B/C
46	825	510	6"	10/12/00	B/C
47	775	425	6"	10/12/00	B/C
47	775	475	6"	10/12/00	B/C
47	725	425	6"	10/12/00	B/C
47	725	475	7"	10/13/00	B/C
47	775	510	9"	10/12/00	B/C
47	720	510	8" (mixed w/sediment)	10/13/00	B/C
Section 3					
16	675	135	11"	11/02/00	B/C
16	625	130	7" mixed	11/02/00	B/C
16	675	175	6"	11/02/00	B/C
16	625	175	6"	11/02/00	B/C
17	575	125	6"	11/01/00	B/C
17	525	125	7"	11/01/00	B/C
17	575	175	8"	11/01/00	B/C
17	525	175	8"	11/01/00	B/C
27	675	225	6.5"	11/02/00	B/C
27	625	225	8"	11/02/00	B/C
27	675	275	7.5"	11/02/00	B/C
27	625	275	7.5"	11/02/00	B/C
28	575	225	12"	11/02/00	B/C
28	525	225	6"	11/02/00	B/C
28	575	275	10"	11/02/00	B/C
28	525	275	6"	11/02/00	B/C
38	650	350	8"	11/02/00	B/C

Table 5 *(Continued)*

Subunit #	Site Grid		Measured Sand Thickness	Date Measured	Method
	North	East			
39	575	325	11"	11/02/00	B/C
39	525	325	9"	11/02/00	B/C
39	575	375	6" mixed	11/02/00	B/C
39	525	375	8"	11/02/00	B/C
48	650	450	6"	11/02/00	B/C
49	550	450	8"	11/02/00	B/C
Section 4					
18	475	125	6"	11/03/00	B/C
18	425	125	11"	11/03/00	B/C
18	475	175	10+"	11/06/00	B/C
18	425	175	6"	11/06/00	B/C
19	375	125	10"	11/03/00	B/C
19	320	125	6.5"	11/06/00	B/C
19	375	175	9.5"	11/06/00	B/C
19	310	175	7"	11/06/00	B/C
29	475	225	14"	11/06/00	B/C
29	425	225	6"	11/06/00	B/C
29	475	275	6+"	11/06/00	B/C
29	425	275	11"	11/06/00	B/C
30	360	250	10"	11/06/00	B/C
30	310	250	11+"	11/06/00	B/C
35	930	370	14"	11/06/00	B/C*
40	475	325	9.5"	11/03/00	B/C
40	425	325	7+"	11/06/00	B/C
40	475	375	13.5"	11/03/00	B/C
40	425	375	6" mixed	11/03/00	B/C
41	370	350	6+"	11/06/00	B/C
41	320	350	10" mixed	11/06/00	B/C
48	680	510	11"	11/08/00	B/C*
50	475	516	11.4"	11/08/00	B/C*
50	475	425	7.5" mixed	11/03/00	B/C
50	425	425	10" mixed	11/03/00	B/C
50	475	490	6" mixed	11/03/00	B/C
50	425	485	9" mixed	11/06/00	B/C
51	320	498	9.5"	11/08/00	B/C
51	370	440	8" mixed	11/06/00	B/C
51	320	450	7" mixed	11/06/00	B/C
51	370	490	7" mixed	11/06/00	B/C

B/C = Boat w/push core
*Indicates retest after additional sand had been placed in area.

Prepared by: JBH1
Checked by: DMR

Table 6

2000 Fox River SMU 56/57 Project
Post-Dredge PCB Sediment Surface Concentrations

Table 6 - Post Dredge PCB Sediment Surface Concentrations

Sample Date and Location	Sub-Unit	Sample ID	Total PCB Concentration (mg/kg dry wt)	Percent Solids
September 15, 2000				
10+53.3N, 1+66.3E	12	S11201 0-4”	0.85 ppm	44.4
9+11.3N, 1+65.0E	13	S11301 0-4”	6.8 ppm	49.9
10+13.3N, 2+56.2E	23	S12301 0-4”	8.5 ppm	49.9
9+70.3N, 2+88.6E	24	S12401 0-4”	1.3 ppm	50.4
September 23, 2000				
8+30.3N, 1+95.8E	14	S11401 0-4”	1.50 ppm	49.5
7+14.0N, 1+88.2E	15	S11501 0-4”	0.26 ppm	54.6
8+96.4N, 2+61.9E	25	S12501 0-4”	2.90 ppm	48.5
7+10.0N, 2+04.7E	26	S12601 0-4”	0.22 ppm	56.1
September 29, 2000				
8+54N, 3+06.5E	36	S13601 0-4”	2.6 ppm	33.5
7+92.4N, 3+68.9E	37	S13701 0-4”	0.42 ppm	48.5
8+06.2N, 4+51.4E	46	S14601 0-4”	No detect (<0.038 ppm)	57.2
7+26.9N, 4+72.4E	47	S14701 0-4”	2.6 ppm	30.0
October 11-12, 2000				
6+50N, 1+55E	16	S11601 0-4”	1.5 ppm	57.8
5+91.6N, 1+91.5E	17	S11701 0-4”	4.8 ppm	46.8
6+69.6N, 2+09.6E	27	S12701 0-4”	3.3 ppm	47.1
5+13.3N, 2+75.8E	28	S12801 0-4”	1.9 ppm	52.1
6+35.7N, 3+07.2E	38	S13801 0-4”	0.5 ppm	59.0
5+13.8N, 3+06.5E	39	S13901 0-4”	1.3 ppm	57.6
6+89.3N, 4+47.7E	48	S14801 0-4”	0.18 ppm	54.6
5+70.2N, 4+12.0E	49	S14901 0-4”	0.21 ppm	45.8
October 26-27 2000				
4+26.8N, 1+57.4E	18	S11801 0-4”	1.9 ppm	50.5
3+92.9N, 1+91.2E	19	S11901 0-4”	2.2 ppm	49.6
4+91.3N, 2+70.3E	29	S12901 0-4”	9.5 ppm	42.5
3+50.5N, 2+71.1E	30	S13001 0-4”	0.077 ppm	68.8
4+90.8N, 3+72.9E	40	S14001 0-4”	1.6 ppm	48.2
3+53.2N, 3+92.7E	41	S14101 0-4”	0.50 ppm	49.7
4+49.0N, 4+52.4E	50	S15001 0-4”	2.2 ppm	49.8
3+89.1N, 4+31.9E	51	S15101 0-4”	0.63 ppm	59.4

Prepared by: JBH1
Checked by: DMR

Table 7

2000 Fox River SMU 56/57 Project
Quality Control Analyses Performed

	Field Blank		Field Duplicate		Matrix Spike		Matrix Spike Dup.		Lab Blank		Lab Duplicate	
	Rqd.	Done	Rqd.	Done	Rqd.	Done	Rqd.	Done	Rqd.	Done	Rqd.	Done
PCBs (Aroclor) – Residual Sediment & Dewatered Sediment	NA*	--	1/20	1	1/20	14	1/20	14	1/20	38	NA	--
PCBs – (Aroclor) Water Column & Discharge Water	1/20	3	1/20	1	1/20	2	1/20	2	1/20	23	NA	--
Mercury – Discharge Water	1/20	19	1/10	12	1/20	3	1/20	3	2/wk	20	1/10	5
BOD_5 – Discharge Water	NA	--	1/20	1	NA	--	NA	--	1/20	10	1/20	5
PH & TSS – Discharge Water	NA	3	1/20	3	NA	--	NA	--	1/20	13	1/20	10

Note:

*Dedicated sampling devices were used for these samples

Prepared by: LAH
Checked by: RGF